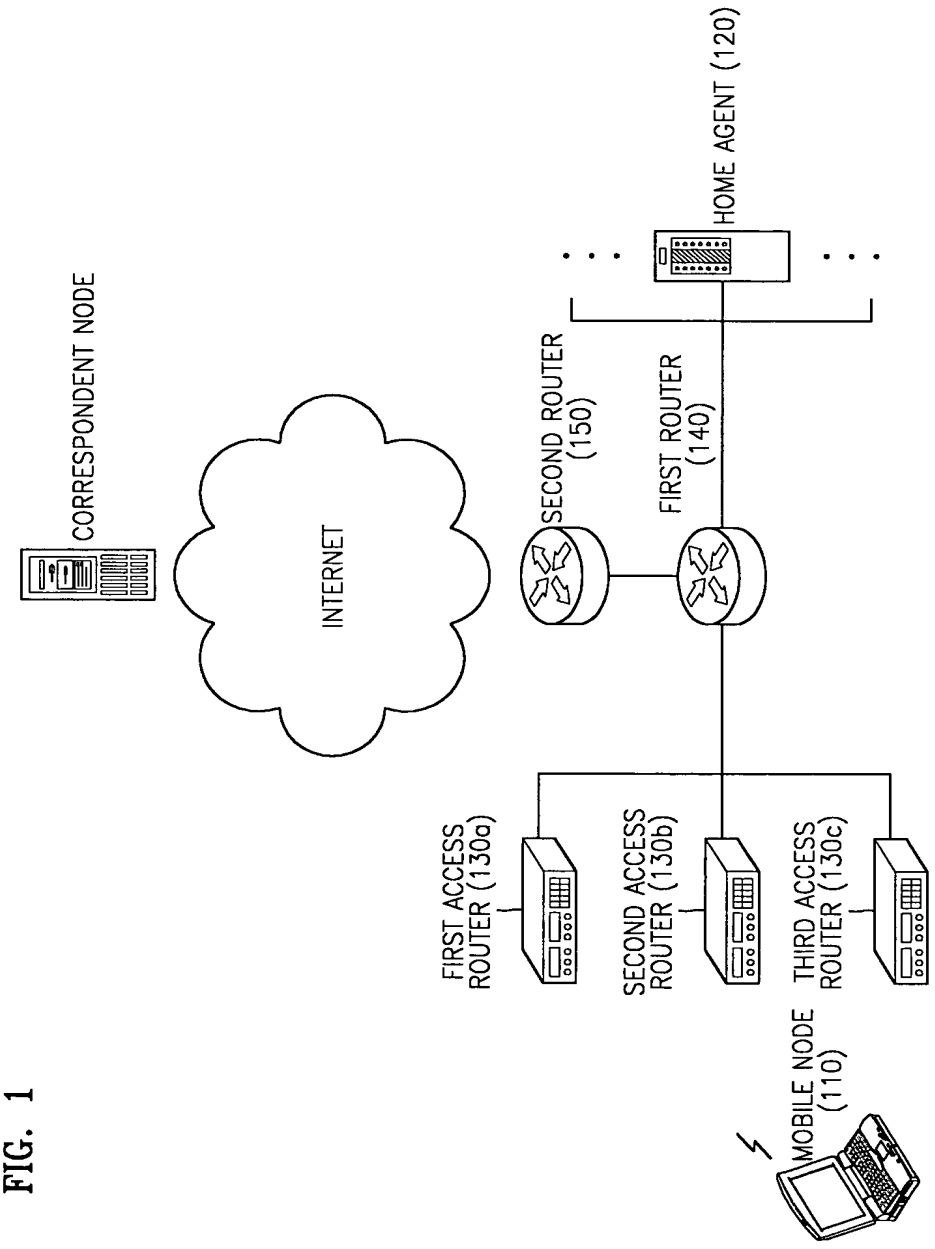

CORRESPONDENT NODE
INTERNET
SECOND ROUTER (150)
FIRST ROUTER (140)
HOME AGENT (120)
FIRST ACCESS ROUTER (130a)
SECOND ACCESS ROUTER (130b)
THIRD ACCESS ROUTER (130c)
MOBILE NODE (110)

FIG. 1

FIG. 2

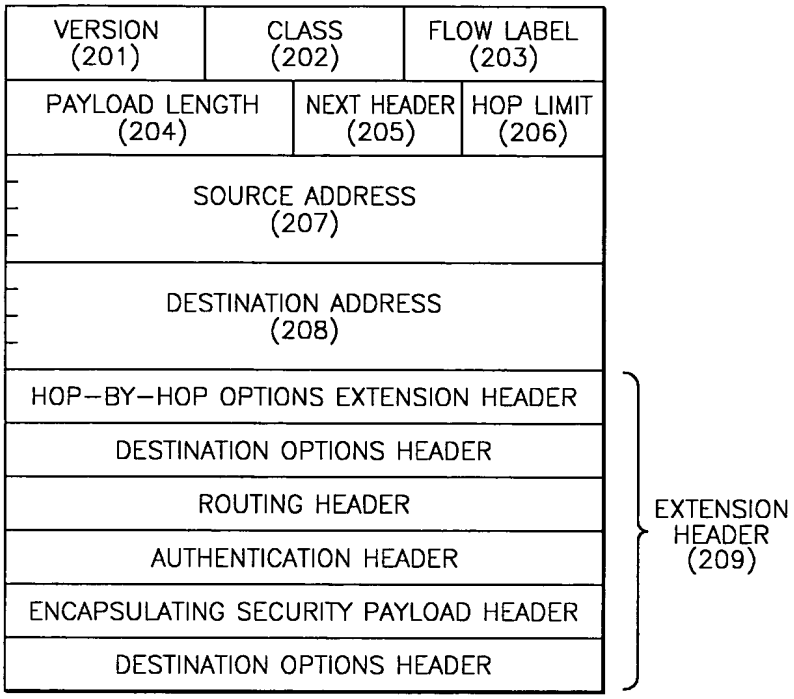

VERSION (201)
CLASS (202)
FLOW LABEL (203)
PAYLOAD LENGTH (204)
NEXT HEADER (205)
HOP LIMIT (206)
SOURCE ADDRESS (207)
DESTINATION ADDRESS (208)
HOP-BY-HOP OPTIONS EXTENSION HEADER
DESTINATION OPTIONS HEADER
ROUTING HEADER
AUTHENTICATION HEADER
ENCAPSULATING SECURITY PAYLOAD HEADER
DESTINATION OPTIONS HEADER
EXTENSION HEADER (209)

FIG. 3

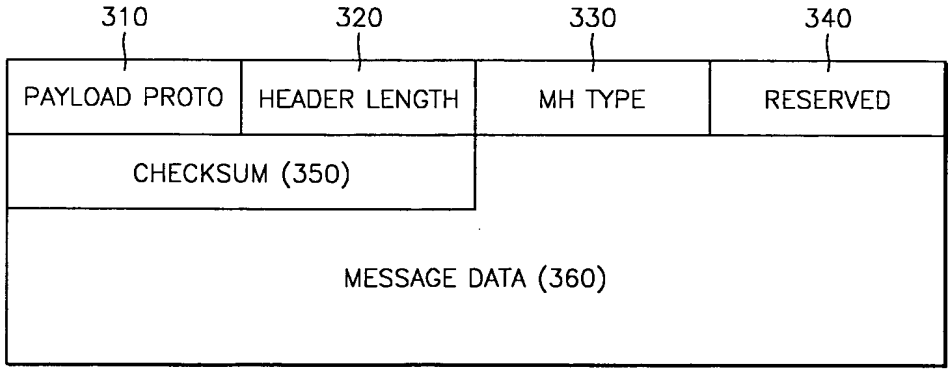

310
320
330
340
PAYLOAD PROTO
HEADER LENGTH
MH TYPE
RESERVED
CHECKSUM (350)
MESSAGE DATA (360)

FIG. 4

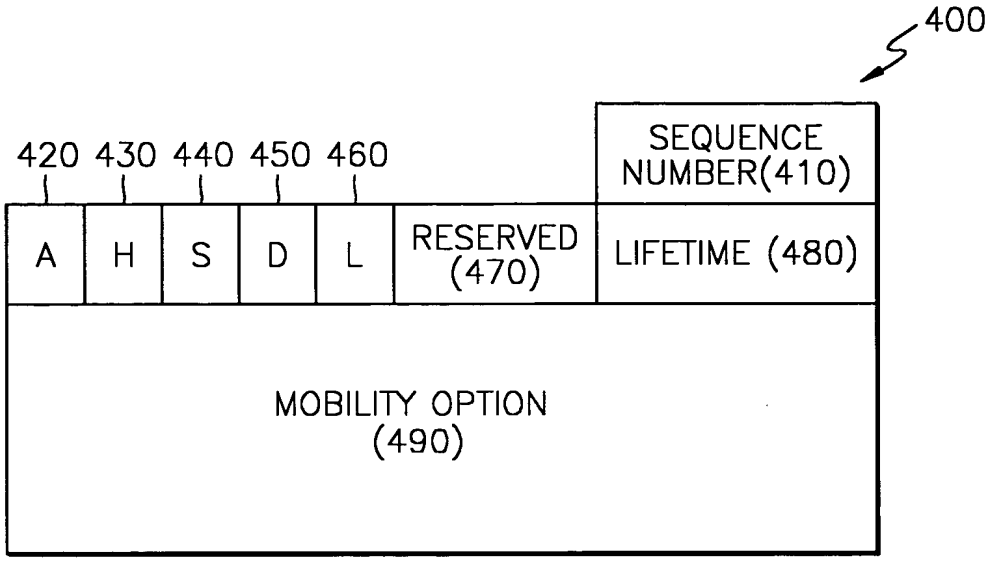

400
420 430 440 450 460
SEQUENCE NUMBER(410)
A
H
S
D
L
RESERVED (470)
LIFETIME (480)
MOBILITY OPTION (490)

FIG. 5

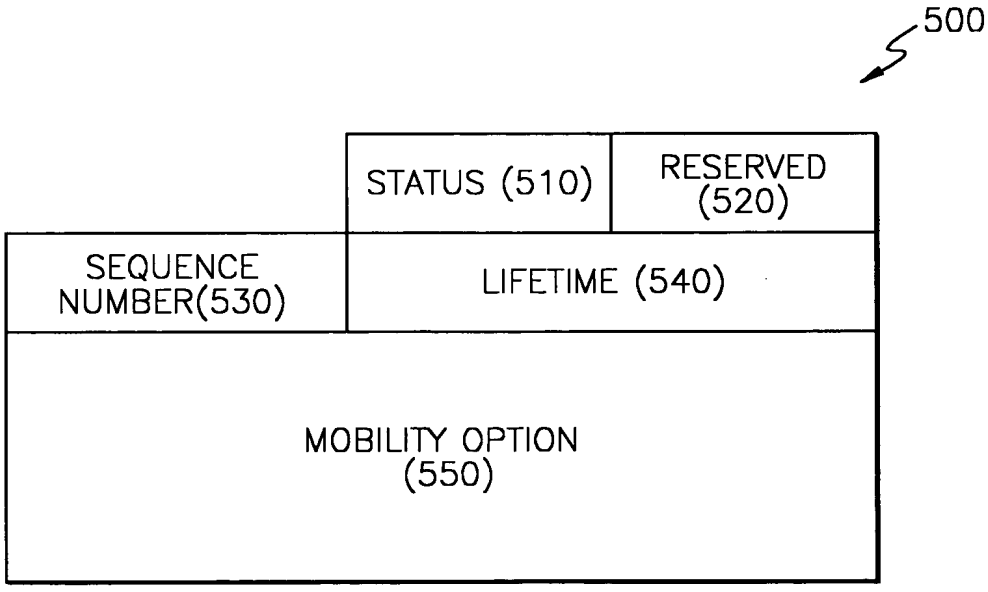

500
STATUS (510)
RESERVED (520)
SEQUENCE NUMBER(530)
LIFETIME (540)
MOBILITY OPTION (550)

FIG. 6

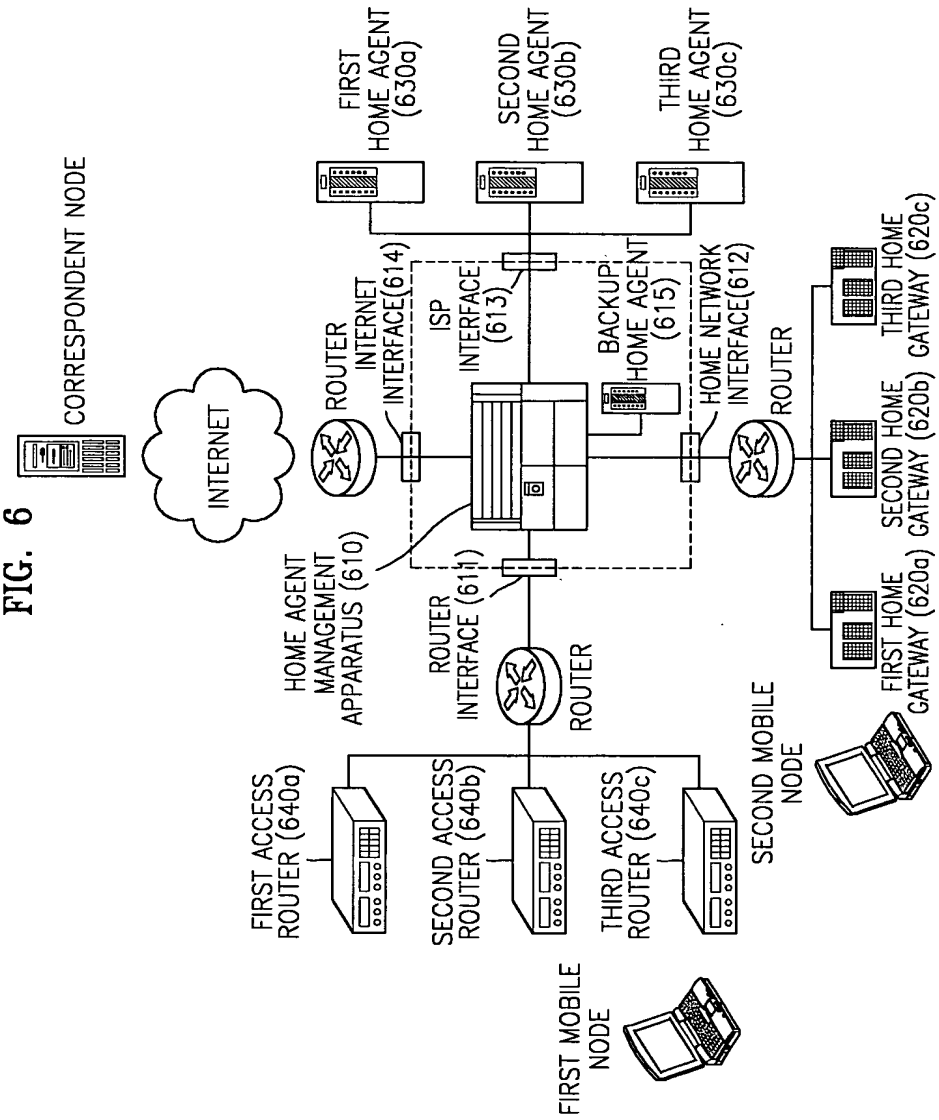

CORRESPONDENT NODE
INTERNET
ROUTER
INTERNET INTERFACE(614)
ISP INTERFACE (613)
BACKUP HOME AGENT (615)
HOME NETWORK INTERFACE(612)
ROUTER
FIRST HOME AGENT (630a)
SECOND HOME AGENT (630b)
THIRD HOME AGENT (630c)
HOME AGENT MANAGEMENT APPARATUS (610)
ROUTER INTERFACE (611)
ROUTER
FIRST HOME GATEWAY (620a)
SECOND HOME GATEWAY (620b)
THIRD HOME GATEWAY (620c)
FIRST ACCESS ROUTER (640a)
SECOND ACCESS ROUTER (640b)
THIRD ACCESS ROUTER (640c)
SECOND MOBILE NODE
FIRST MOBILE NODE

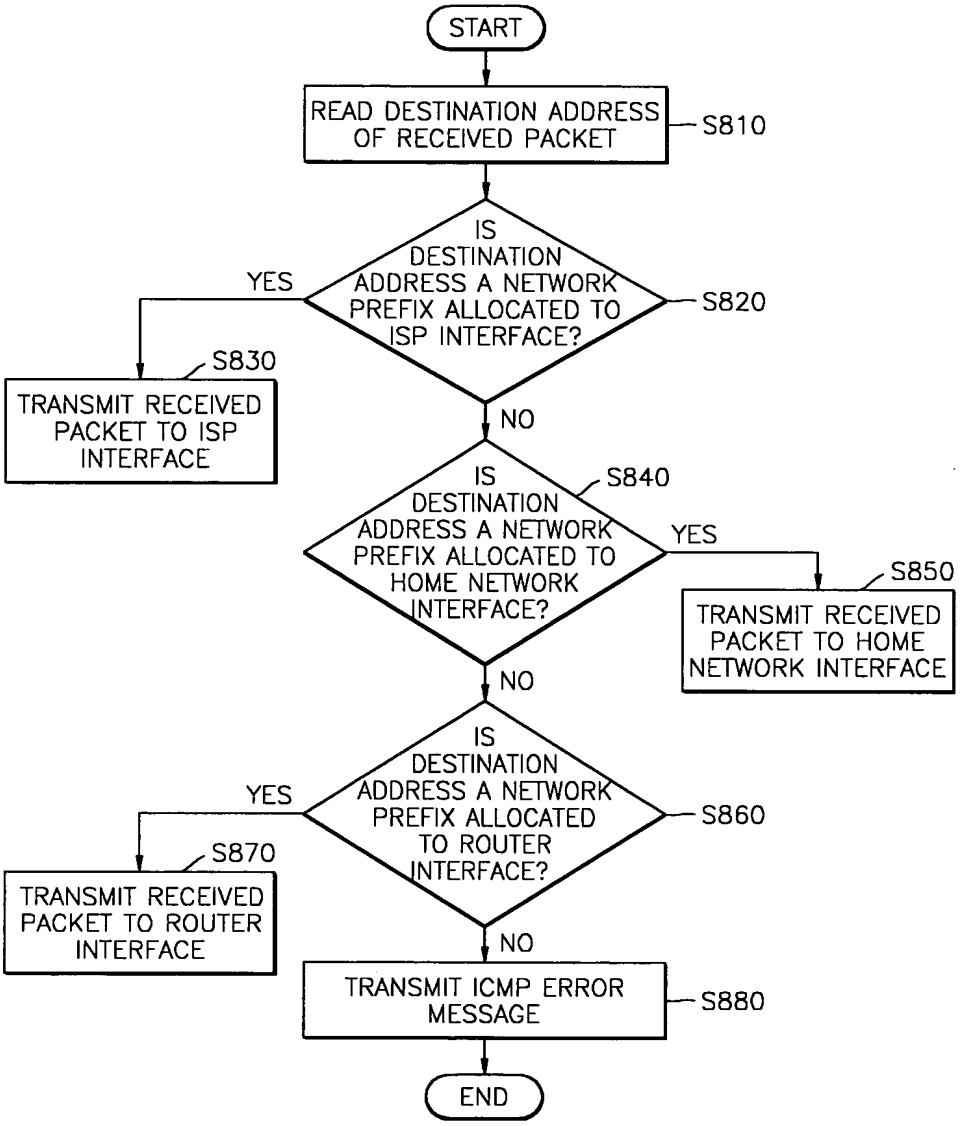
FIG. 7

ISP INTERFACE:
2001:1234:5678:1000::0/52
⋮
2001:1234:5678:3000::0/52

HOME NETWORK INTERFACE:
2001:1234:5678:4000::0/52
⋮
2001:1234:5678:9000::0/52

ROUTER INTERFACE:
2001:1234:5678:A000::0/52
⋮
2001:1234:5678:F000::0/52

FIG. 8


START
READ DESTINATION ADDRESS OF RECEIVED PACKET
S810
IS DESTINATION ADDRESS A NETWORK PREFIX ALLOCATED TO ISP INTERFACE?
S820
YES
S830
TRANSMIT RECEIVED PACKET TO ISP INTERFACE
NO
IS DESTINATION ADDRESS A NETWORK PREFIX ALLOCATED TO HOME NETWORK INTERFACE?
S840
YES
S850
TRANSMIT RECEIVED PACKET TO HOME NETWORK INTERFACE
NO
IS DESTINATION ADDRESS A NETWORK PREFIX ALLOCATED TO ROUTER INTERFACE?
S860
YES
S870
TRANSMIT RECEIVED PACKET TO ROUTER INTERFACE
NO
TRANSMIT ICMP ERROR MESSAGE
S880
END

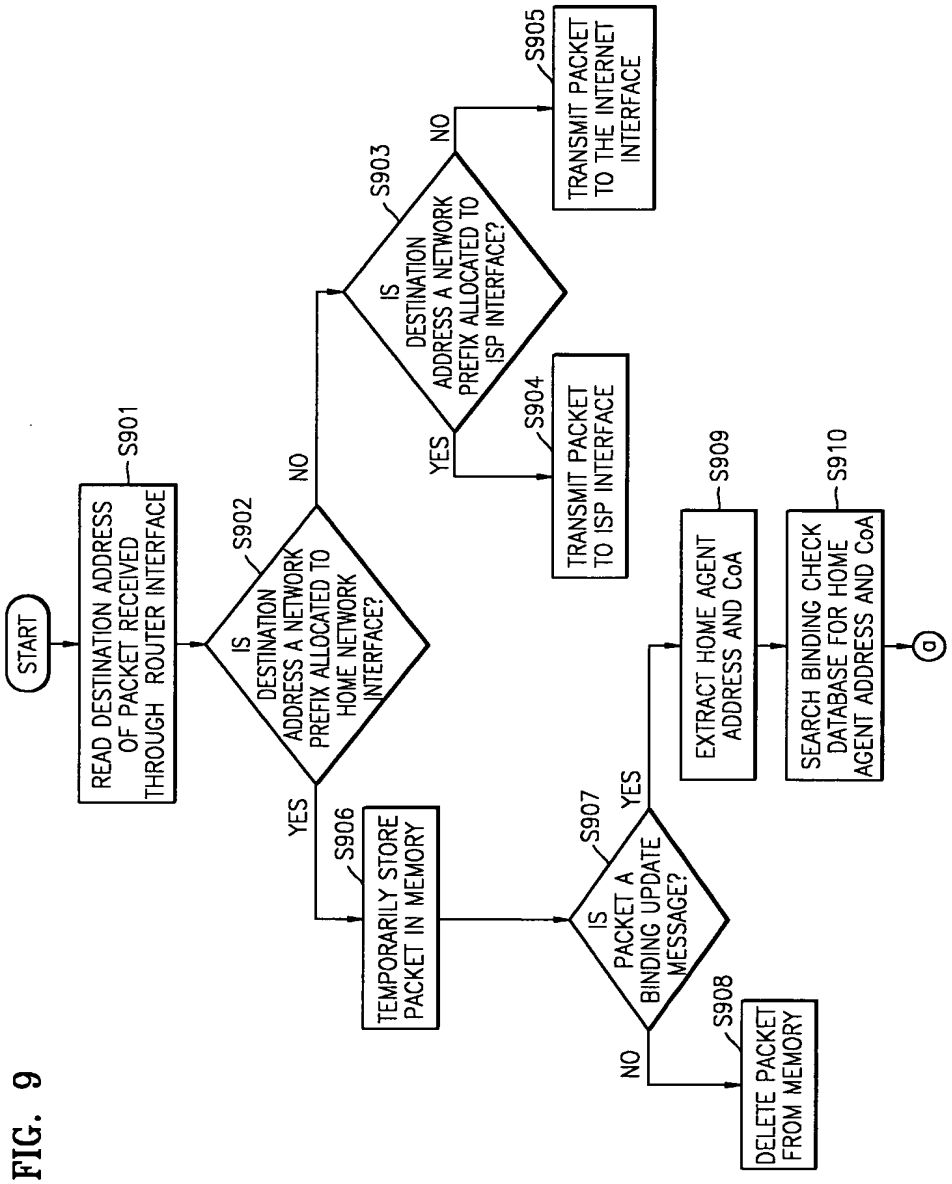

START
READ DESTINATION ADDRESS OF PACKET RECEIVED THROUGH ROUTER INTERFACE
S901
IS DESTINATION ADDRESS A NETWORK PREFIX ALLOCATED TO HOME NETWORK INTERFACE?
S902
YES
NO
TEMPORARILY STORE PACKET IN MEMORY
S906
IS DESTINATION ADDRESS A NETWORK PREFIX ALLOCATED TO ISP INTERFACE?
S903
YES
NO
TRANSMIT PACKET TO ISP INTERFACE
S904
TRANSMIT PACKET TO THE INTERNET INTERFACE
S905
IS PACKET A BINDING UPDATE MESSAGE?
S907
YES
NO
EXTRACT HOME AGENT ADDRESS AND CoA
S909
SEARCH BINDING CHECK DATABASE FOR HOME AGENT ADDRESS AND CoA
S910
DELETE PACKET FROM MEMORY
S908
A

FIG. 9

FIG. 10A

1010	1020	1030
HOME AGENT ADDRESS1	CoA1	COUNT1
HOME AGENT ADDRESS2	CoA2	COUNT2
⋮	⋮	⋮

FIG. 10B

1040	1050	1060	1070	1080
HOME AGENT ADDRESS1	HOME ADDRESS1	CoA1	LIFETIME1	SEQUENCE1
HOME AGENT ADDRESS2	HOME ADDRESS2	CoA2	LIFETIME2	SEQUENCE2
⋮	⋮	⋮	⋮	⋮

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Filing Date: January 6, 2004
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FIG. 11

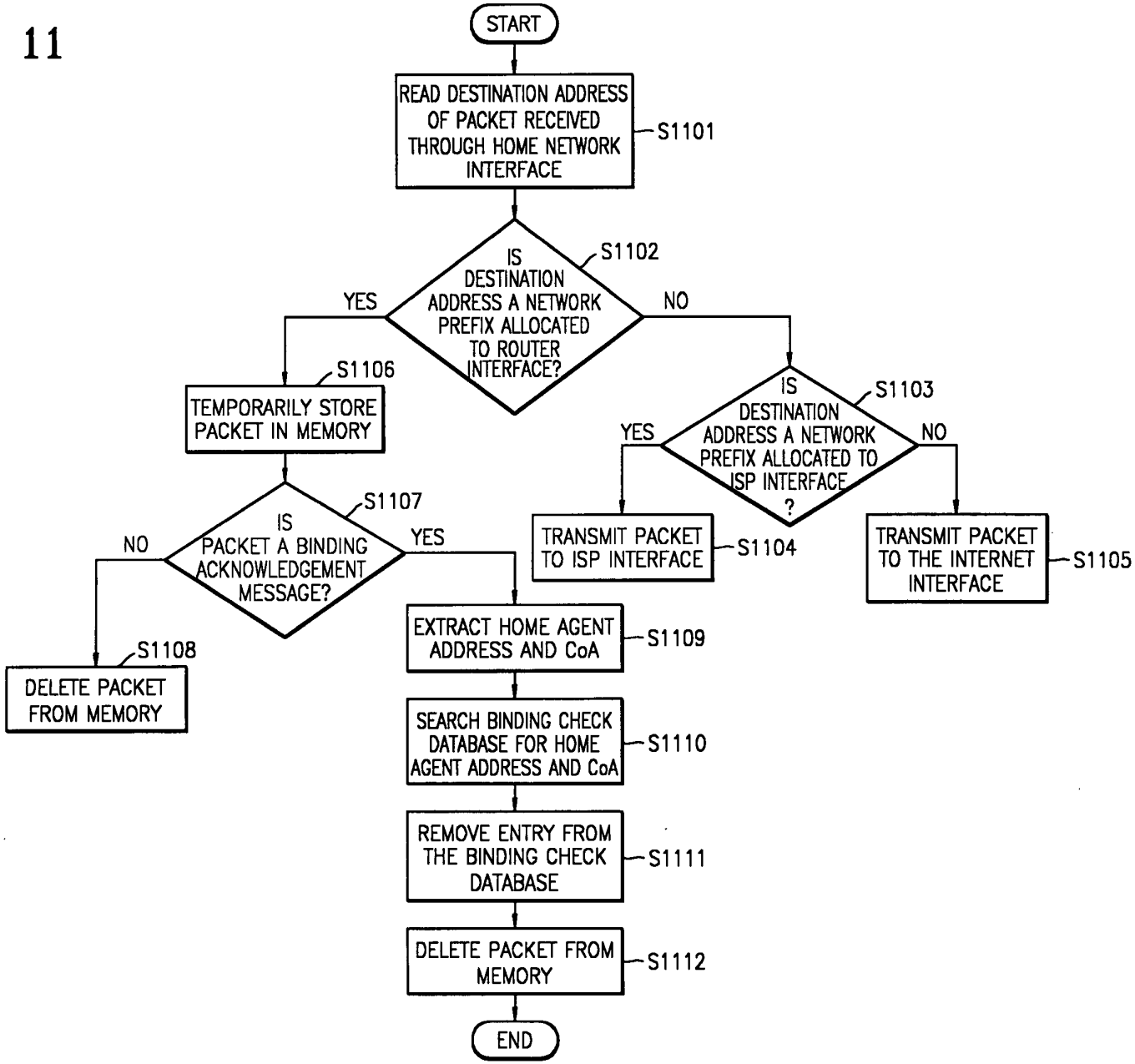


FIG. 12

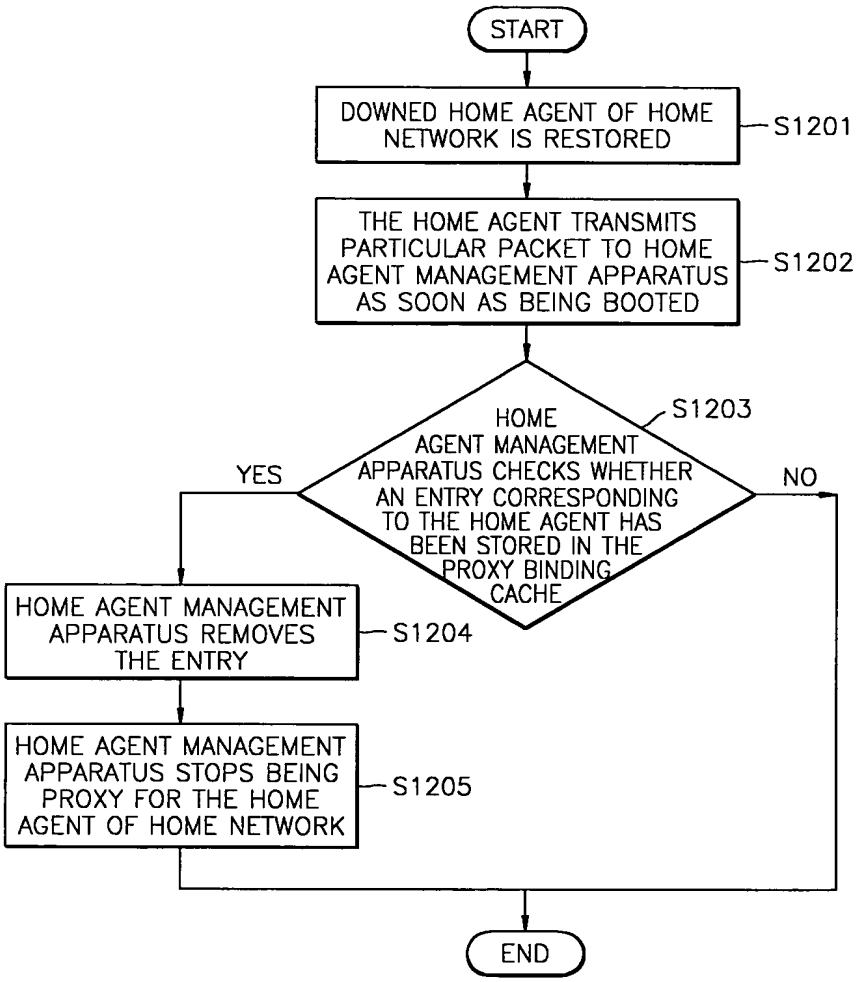
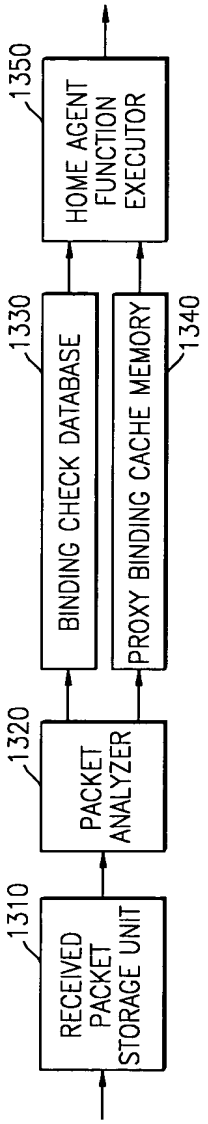

START
DOWNED HOME AGENT OF HOME NETWORK IS RESTORED
S1201
THE HOME AGENT TRANSMITS PARTICULAR PACKET TO HOME AGENT MANAGEMENT APPARATUS AS SOON AS BEING BOOTED
S1202
HOME AGENT MANAGEMENT APPARATUS CHECKS WHETHER AN ENTRY CORRESPONDING TO THE HOME AGENT HAS BEEN STORED IN THE PROXY BINDING CACHE
S1203
YES
NO
HOME AGENT MANAGEMENT APPARATUS REMOVES THE ENTRY
S1204
HOME AGENT MANAGEMENT APPARATUS STOPS BEING PROXY FOR THE HOME AGENT OF HOME NETWORK
S1205
END

FIG. 13


1350
HOME AGENT FUNCTION EXECUTOR
1330
BINDING CHECK DATABASE
1340
PROXY BINDING CACHE MEMORY
1320
PACKET ANALYZER
1310
RECEIVED PACKET STORAGE UNIT